



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

12. Proposed by H. W. DRAUGHON, Clinton, Louisiana.

Find three numbers such that, the sum of their cubes may be a square, and the sum of their squares a cube.

Solution by ARTEMAS MARTIN, LL.D., U. S. Coast and Geodetic Survey Office, Washington, D. C.

Let ax , bx and cx denote the numbers; then $(a^3 + b^3 + c^3)x^3 = \square \dots (1)$,
 $(a^2 + b^2 + c^2)x^2 = \text{cube} = x^3$ say $\dots (2)$ and we have $x = a^2 + b^2 + c^2$.

Substituting in (1), after expunging x^2 , $(a^3 + b^3 + c^2)(a^3 + b^3 + c^3) = \square \dots (3)$.

Let $mv = a$, $nv = b$, $pv = c$; then (3) becomes

$$(m^2 + n^2 + p^2)(m^3 + n^3 + p^3)v = \square, = v^2 \text{ say, after rejecting } v^4; \text{ whence}$$

$$v = (m^2 + n^2 + p^2)(m^3 + n^3 + p^3).$$

$$\therefore \begin{aligned} a &= m(m^2 + n^2 + p^2)(m^3 + n^3 + p^3), \\ b &= n(m^2 + n^2 + p^2)(m^3 + n^3 + p^3), \\ c &= p(m^2 + n^2 + p^2)(m^3 + n^3 + p^3); \end{aligned}$$

$$\text{and } x = a^2 + b^2 + c^2 = (m^2 + n^2 + p^2)^3(m^3 + n^3 + p^3)^2.$$

$$\text{Hence } ax = m(m^2 + n^2 + p^2)^4(m^3 + n^3 + p^3)^3,$$

$$bx = n(m^2 + n^2 + p^2)^4(m^3 + n^3 + p^3)^3,$$

$$cx = p(m^2 + n^2 + p^2)^4(m^3 + n^3 + p^3)^3.$$

If $m=1$, $n=2$, $p=3$, the numbers are, after dividing out the 6th power factor 6^6 , 38416, 76832 and 115248.

Also solved by *H. W. DRAUGHON, F. P. MATZ, and G. B. M. ZERR.*

PROBLEMS.

18. Proposed by Professor G. B. M. ZERR, A. M., Principal of Schools, Staunton, Virginia.

Decompose into the sum of two squares the number $17^3 \cdot 73^5$.

19. Proposed by ARTEMAS MARTIN, LL. D., U. S. Coast and Geodetic Survey Office, Washington, D. C.

Find three positive integer numbers whose sum is a cube, and, also, the sum of any two diminished by the third a cube.

AVERAGE AND PROBABILITY.

Conducted by **B. F. FINKEL, Kidder, Mo.** All contributions to this department should be sent to him.

SOLUTIONS TO PROBLEMS.

5. Proposed by DE VOLSON WOOD, M. A., C. E., Professor of Mechanical Engineering, Stevens Institute of Technology, Hoboken, New Jersey.

An actual case suggested the following:

An equal number of white and black balls of equal size are thrown into a rec-